CLAIMS

1. A curved surface shape inspection method, wherein

in a fiber optic block formed by bundling and integrating a plurality of optical fibers each composed of a core region and a clad region surrounding the core region, an at least partially curved input end face composed of one end of each optical fiber and a measurement surface having a curved surface shape of a to-be-measured object are pressed against each other, and

an optical image formed by bringing the input end face into contact with the measurement surface and output from an output end face of the fiber optic block that is positioned on the opposite side to the input end face is used to inspect the curved surface shape of the to-be-measured object.

2. The curved surface shape inspection method according to claim 1, wherein the measurement surface is an inner surface of a groove included in the to-be-measured object and the optical image includes two contact portion images corresponding to the two respective contact portions of the input end face and the measurement surface, and wherein the distance between the two contact portion images is measured to inspect the curved surface shape of the to-be-measured object.

3. The curved surface shape inspection method according to claim 1, wherein imaging means is used to take the optical image.

4. The curved surface shape inspection method according to claim 1, wherein the fiber optic block has a predetermined region including the output end face in which a light absorber for absorbing

light is provided in such a manner as to surround the clad region in each optical fiber.

5. The curved surface shape inspection method according to claim 4, wherein the difference in refractive index between the core region and the clad region in each optical fiber is smaller in the predetermined region than at the input end face.

6. The curved surface shape inspection method according to claim 1, wherein the input end face and the measurement surface are pressed against each other across a film with translucency, and the optical image output from the output end face is used to inspect the curved surface shape of the to-be-measured object.

7. The curved surface shape inspection method according to claim 1, wherein an inspection pattern provided on the output end face is compared with the optical image to inspect the curved surface shape of the to-be-measured object.

8. The curved surface shape inspection method according to claim 1, wherein luminescent liquid for producing luminescence is applied to the measurement surface and the measurement surface with the luminescent liquid applied thereto and the input end face are pressed against each other, and the optical image output from the output end face is used to inspect the curved surface shape of the to-be-measured object.

9. The curved surface shape inspection method according to claim 1, wherein scattering liquid including scatterers is applied to the measurement surface and the measurement surface with the scattering liquid applied thereto and the input end face are pressed against each

other, and the optical image output from the output end face is used to inspect the curved surface shape of the to-be-measured object.

10. The curved surface shape inspection method according to claim 1, wherein the position of at least one of the fiber optic block and the to-be-measured object is adjusted so that the optical image is positioned within a predetermined range of a positioning pattern provided on the output end face.

11. A fiber optic block adapted to be applied to an inspection of the curved surface shape of a to-be-measured object and formed by bundling and integrating a plurality of optical fibers each composed of a core region and a clad region surrounding the core region, the fiber optic block comprising: an at least partially curved input end face composed of one end of each optical fiber; and an output end face positioned on the opposite side to the input end face and adapted to output an optical image to be formed by light entering the input end face.

12. The fiber optic block according to claim 11, wherein the input end face has a semispherical shape.

13. The fiber optic block according to claim 11, further having a predetermined region including the output end face in which a light absorber for absorbing light is provided in such a manner as to surround the clad region in each optical fiber.

14. The fiber optic block according to claim 13, wherein the difference in refractive index between the core region and the clad region in each optical fiber is smaller in the predetermined region than at the input end face.

15. The fiber optic block according to claim 11, wherein an

inspection pattern for inspecting the curved surface shape of the to-be-measured object is provided on the output end face.

16. The fiber optic block according to claim 11, wherein a positioning pattern for adjusting the position with respect to the to-be-measured object is provided on the output end face.

17. The fiber optic block according to claim 11, wherein the plurality of optical fibers are bundled into a hollow shape.

18. A curved surface shape inspection apparatus for inspecting the curved surface shape of a to-be-measured object, comprising:

a fiber optic block according to any of claims 11 to 17; and

imaging means provided in such a manner as to face the output end face of the fiber optic block and adapted to take an optical image output from the output end face.

19. The curved surface shape inspection apparatus according to claim 18, further comprising illuminating means provided in such a manner as to face the input end face and adapted to illuminate the input end face.

20. The curved surface shape inspection apparatus according to claim 18, further comprising a lens system arranged between the output end face and the imaging means and adapted to input the optical image to the imaging means.